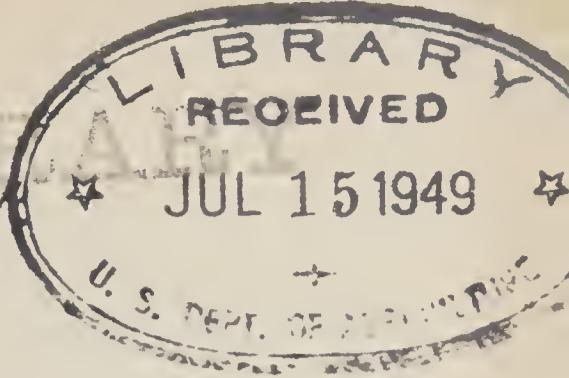


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Issued April 8, 1911.

United States Department of Agriculture,

BUREAU OF BIOLOGICAL SURVEY—Circular No. 79,

HENRY W. HENSHAW, Chief of Bureau.

OUR VANISHING SHOREBIRDS.

By W. L. McATEE, *Assistant, Biological Survey.*

The term shorebird is applied to a group of long-legged, slender-billed, and usually plainly colored birds belonging to the order Limicolæ. More than 60 species of them occur in North America. True to their name they frequent the shores of all bodies of water, large and small, but many of them are equally at home on plains and prairies.

Throughout the eastern United States shorebirds are fast vanishing. While formerly numerous species swarmed along the Atlantic coast and in the prairie regions, many of them have been so reduced that extermination seems imminent. The black-bellied plover or beetlehead, which occurred along the Atlantic seaboard in great numbers years ago, is now seen only as a straggler. The golden plover, once exceedingly abundant east of the Great Plains, is now rare. Vast hordes of long-billed dowitchers formerly wintered in Louisiana; now they occur only in infrequent flocks of a half dozen or less. The Eskimo curlew within the last decade has probably been exterminated and the other curlews greatly reduced. In fact, all the larger species of shorebirds have suffered severely.

So adverse to shorebirds are present conditions that the wonder is that any escape. In both fall and spring they are shot along the whole route of their migration north and south. Their habit of decoying readily and persistently, coming back in flocks to the decoys again and again, in spite of murderous volleys, greatly lessens their chances of escape.

The breeding grounds of some of the species in the United States and Canada have become greatly restricted by the extension of agriculture, and their winter ranges in South America have probably been restricted in the same way.

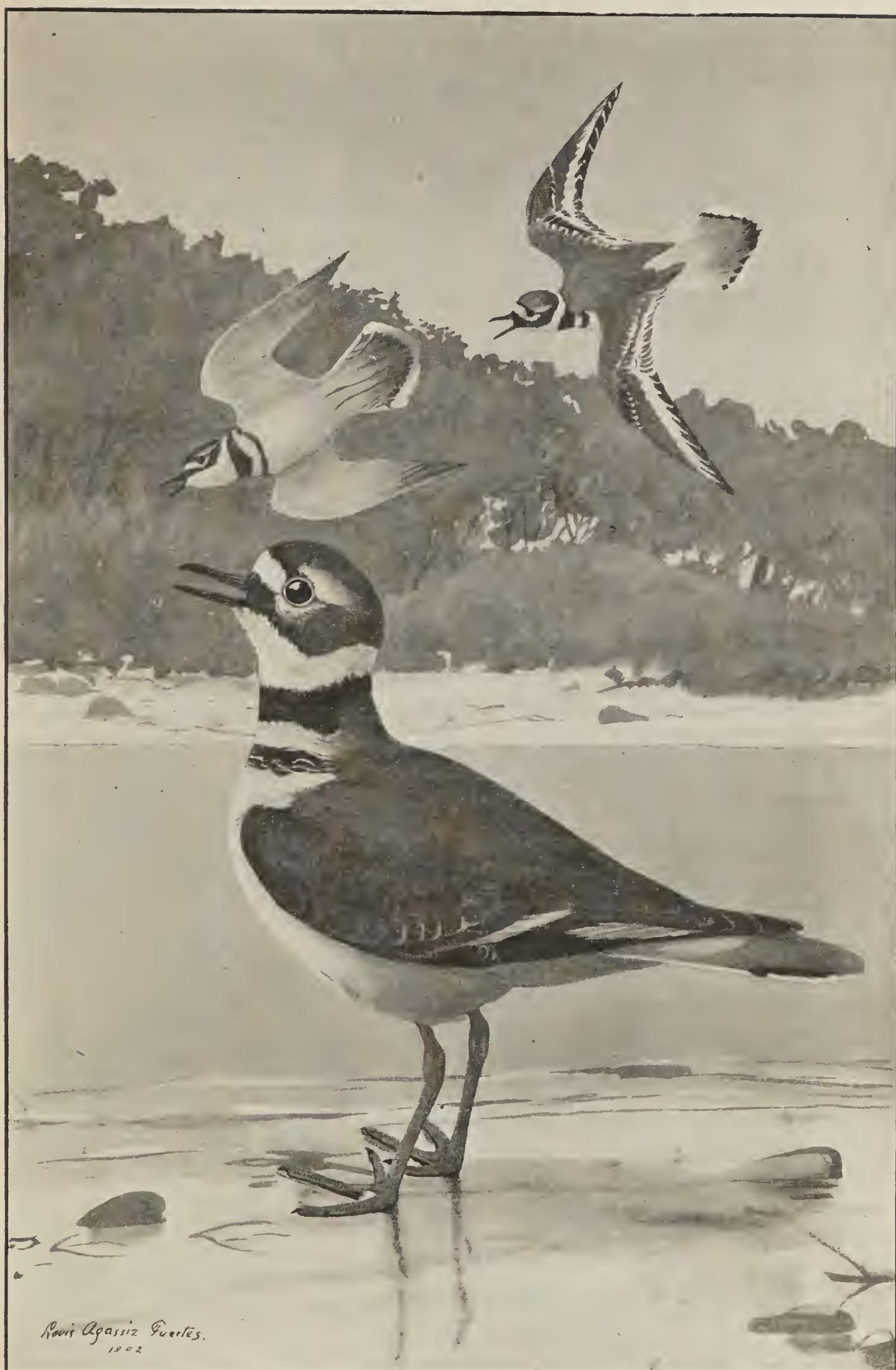
Unfortunately, shorebirds lay fewer eggs than any of the other species generally termed game birds. They deposit only three or four eggs, and hatch only one brood yearly. Nor are they in any wise immune from the great mortality known to prevail among the smaller birds. Their eggs and young are constantly preyed upon during the breeding season by crows, gulls, and jaegers, and the far northern country to which so many of them resort to nest is subject to sudden cold storms, which kill many of the young. In the more temperate climate of the United States small birds, in general, do not bring up more than one young bird for every two eggs laid. Sometimes the proportion of loss is much greater, actual count revealing a destruction of 70 to 80 per cent of nests and eggs. Shorebirds, with sets of three or four eggs, probably do not on the average rear more than two young for each breeding pair.

It is not surprising, therefore, that birds of this family, with their limited powers of reproduction, melt away under the relentless warfare waged upon them. Until recent years shorebirds have had almost no protection. Thus, the species most in need of stringent protection have really had the least. No useful birds which lay only three or four eggs should be retained on the list of game birds. The shorebirds should be relieved from persecution, and if we desire to save from extermination a majority of the species, action must be prompt.

The protection of shorebirds need not be based solely on esthetic or sentimental grounds, for few groups of birds more thoroughly deserve protection from an economic standpoint. Shorebirds perform an important service by their inroads upon mosquitoes, some of which play so conspicuous a part in the dissemination of diseases. Thus, nine species are known to feed upon mosquitoes, and hundreds of the larvae or "wrigglers" were found in several stomachs. Fifty-three per cent of the food of 28 northern phalaropes from one locality consisted of mosquito larvae. The insects eaten include the salt-marsh mosquito (*Aedes sollicitans*), for the suppression of which the State of New Jersey has gone to great expense. The nine species of shorebirds known to eat mosquitoes are:

Northern phalarope (<i>Lobipes lobatus</i>).	Baird sandpiper (<i>Pisobia bairdi</i>).
Wilson phalarope (<i>Steganopus tricolor</i>).	Least sandpiper (<i>Pisobia minutilla</i>).
Stilt sandpiper (<i>Micropalama himantopus</i>).	Semipalmated sandpiper (<i>Ereunetes pusillus</i>).
Pectoral sandpiper (<i>Pisobia maculata</i>).	Killdeer (<i>Oryechus vociferus</i>).
	Semipalmated plover (<i>Aegialitis semipalmata</i>).

Cattle and other live stock also are seriously molested by mosquitoes as well as by another set of pests, the horse-flies. Adults and

FIG. 1.—Killdeer (*Oxyechus vociferus.*)

larvæ of these flies have been found in the stomachs of the dowitcher, the pectoral sandpiper, the hudsonian godwit, and the killdeer. Two species of shorebirds, the killdeer and upland plover, still further befriend cattle by devouring the North American fever tick.

Among other fly larvæ consumed are those of the crane flies (leatherjackets) devoured by the following species:

Northern phalarope (<i>Lobipes lobatus</i>).	Pectoral sandpiper (<i>Pisobia maculata</i>).
Wilson phalarope (<i>Steganopus tricolor</i>).	Baird sandpiper (<i>Pisobia bairdi</i>).
Woodcock (<i>Philohela minor</i>).	Upland plover (<i>Bartramia longicauda</i>).
Jacksnipe (<i>Gallinago delicata</i>).	Killdeer (<i>Oxyechus vociferus</i>).

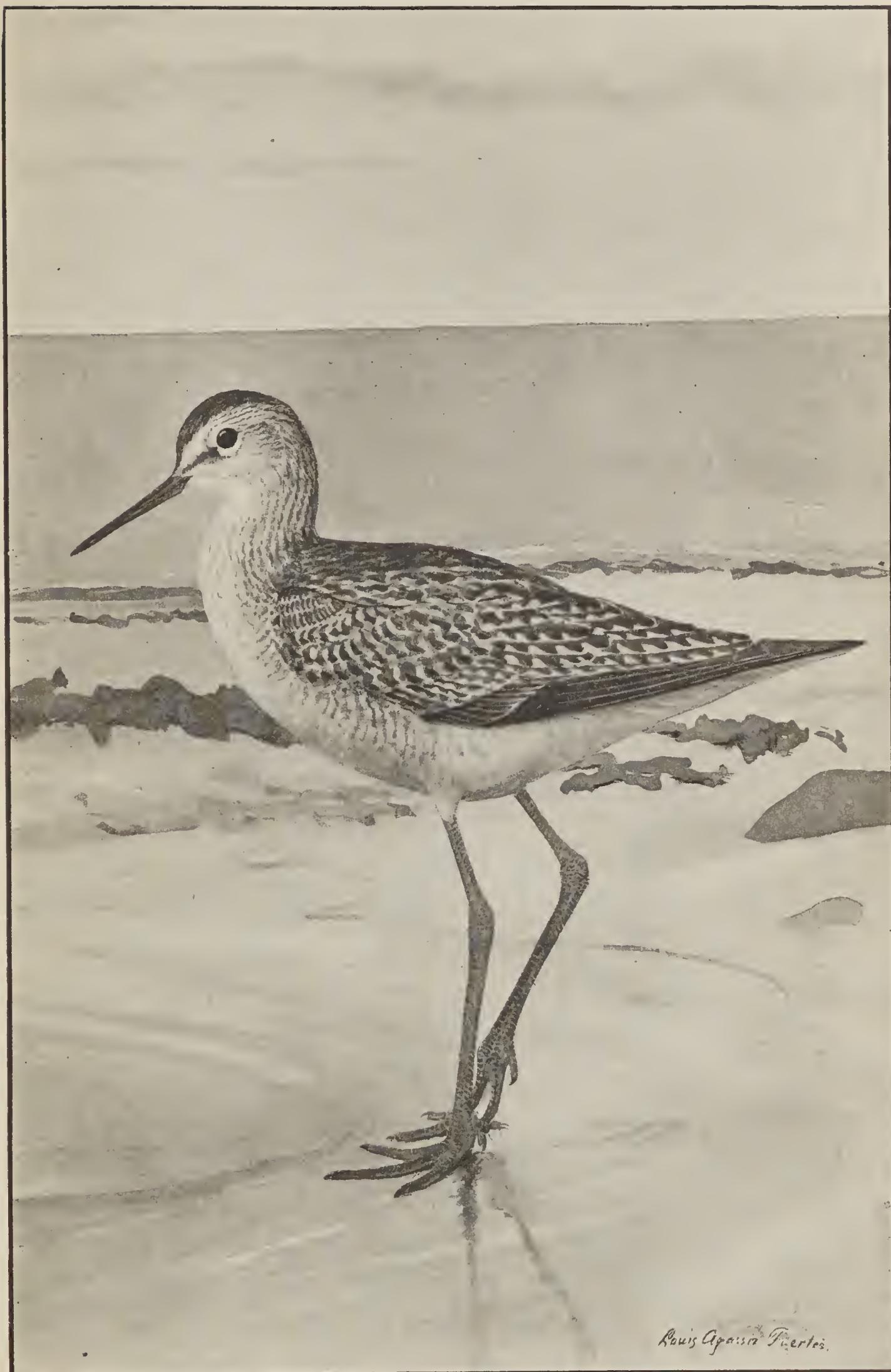
Crane-fly larvæ are frequently seriously destructive locally in grass lands and wheat fields. Among their numerous bird enemies, shorebirds rank high.

Another group of insects of which the shorebirds are very fond is grasshoppers. Severe local infestations of grasshoppers, frequently involving the destruction of many acres of corn, cotton, and other crops, are by no means exceptional. Aughey found 23 species of shorebirds feeding on Rocky Mountain locusts in Nebraska, some of them consuming large numbers, as shown below.

- 9 killdeer stomachs contained an average of 28 locusts each.
- 11 semipalmated plover stomachs contained an average of 38 locusts each.
- 16 mountain plover stomachs contained an average of 45 locusts each.
- 11 jacksnipe stomachs contained an average of 37 locusts each.
- 22 upland plover stomachs contained an average of 36 locusts each.
- 10 long-billed curlew stomachs contained an average of 48 locusts each.

Even under ordinary conditions grasshoppers are a staple food of many members of the shorebird family, and the following species are known to feed on them:

Northern phalarope (<i>Lobipes lobatus</i>).	Upland plover (<i>Bartramia longicauda</i>).
Avocet (<i>Recurvirostra americana</i>).	Buff-breasted sandpiper (<i>Tryngites subruficollis</i>).
Black-necked stilt (<i>Himantopus mexicanus</i>).	Spotted sandpiper (<i>Actitis macularia</i>).
Woodcock (<i>Philohela minor</i>).	Long-billed curlew (<i>Nnumenius americanus</i>).
Jacksnipe (<i>Gallinago delicata</i>).	Black-bellied plover (<i>Squatarola squatarola</i>).
Dowitcher (<i>Macrorhamphus griseus</i>).	Golden plover (<i>Charadrius dominicus</i>).
Robin snipe (<i>Tringa canutus</i>).	Killdeer (<i>Oxyechus vociferus</i>).
White-rumped sandpiper (<i>Pisobia fuscicollis</i>).	Semipalmated plover (<i>Ægialitis semipalmata</i>).
Baird sandpiper (<i>Pisobia bairdi</i>).	Ringed plover (<i>Ægialitis hiaticula</i>).
Least sandpiper (<i>Pisobia minutilla</i>).	Mountain plover (<i>Podasocys montanus</i>).
Marbled godwit (<i>Limosa fedoa</i>).	Turnstone (<i>Arenaria interpres</i>).
Yellowlegs (<i>Totanus flavipes</i>).	
Solitary sandpiper (<i>Helodromas solitarius</i>).	

FIG. 2.—Yellowlegs (*Totanus flavipes*).

Shorebirds are fond of other insect pests of forage and grain crops, including the army worm, which is known to be eaten by the killdeer and spotted sandpiper; also cutworms, among whose enemies are the avocet, woodcock, pectoral and Baird sandpipers, upland plover, and killdeer. Two caterpillar enemies of cotton, the cotton worm and the cotton cutworm, are eaten by the upland plover and killdeer. The latter bird feeds also on caterpillars of the genus *Phlegethontius*, which includes the tobacco and tomato worms.

The principal farm crops have many destructive beetle enemies also, and some of these are eagerly eaten by shorebirds. The boll weevil and clover-leaf weevil are eaten by the upland plover and killdeer, the rice weevil by the killdeer, the cowpea weevil by the upland plover, and the clover-root curculio by the following species of shorebirds:

Northern phalarope (<i>Lobipes lobatus</i>).	White-rumped sandpiper (<i>Pisobia fuscicollis</i>).
Pectoral sandpiper (<i>Pisobia maculata</i>).	Upland plover (<i>Bartramia longicauda</i>).
Baird sandpiper (<i>Pisobia bairdi</i>).	Killdeer (<i>Oryzachus vociferus</i>).

The last two eat also other weevils which attack cotton, grapes, and sugar beets. Bill-bugs, which often do considerable damage to corn, seem to be favorite food of some of the shorebirds. They are eaten by the Wilson phalarope, avocet, black-necked stilt, pectoral sandpiper, killdeer, and upland plover. They are an important element of the latter bird's diet, and no fewer than 8 species of them have been found in its food.

Wireworms and their adult forms, click beetles, are devoured by the northern phalarope, woodcock, jacksnipe, pectoral sandpiper, killdeer, and upland plover. The last three feed also on the southern corn leaf-beetle and the last two upon the grapevine colaspis. Other shorebirds that eat leaf-beetles are the Wilson phalarope and dowitcher.

Crayfishes, which are a pest in rice and corn fields in the South and which injure levees, are favorite food of the black-necked stilt, and several other shorebirds feed upon them, notably the jacksnipe, robin snipe, spotted sandpiper, upland plover, and killdeer.

Thus it is evident that shorebirds render important aid by devouring the enemies of farm crops and in other ways, and their services are appreciated by those who have observed the birds in the field. Thus W. A. Clark, of Corpus Christi, Tex., reports that upland plovers are industrious in following the plow and in eating the grubs that destroy garden stuff, corn, and cotton crops. H. W. Tinkham, of Fall River, Mass., says of the spotted sandpiper: "Three pairs nested in a young orchard behind my house and adjacent to my garden. I did not see them once go to the shore for food (shore



FIG. 3.—Upland Plover (*Bartramia longicauda*).

about 1,500 feet away), but I did see them many times make faithful search of my garden for cutworms, spotted squash bugs, and green flies. Cutworms and cabbage worms were their especial prey. After the young could fly, they still kept at work in my garden, and showed no inclination to go to the shore until about August 15. They and a flock of quails just over the wall helped me wonderfully."

In the uncultivated parts of their range also, shorebirds search out and destroy many creatures that are detrimental to man's interest. Several species prey upon the predaceous diving beetles (Dytiscidae), which are a nuisance in fish hatcheries and which destroy many insects, the natural food of fishes. The birds now known to take these beetles are:

Northern phalarope (<i>Lobipes lobatus</i>).	Dowitcher (<i>Macrorhamphus griseus</i>).
Wilson phalarope (<i>Steganopus tricolor</i>).	Robin snipe (<i>Tringa canutus</i>).
Avocet (<i>Recurvirostra americana</i>).	Pectoral sandpiper (<i>Pisobia maculata</i>).
Black-necked stilt (<i>Himantopus mericanus</i>).	Red-backed sandpiper (<i>Pelidna alpina sakhalina</i>).
Jacksnipe (<i>Gallinago delicata</i>).	Killdeer (<i>Oxyechus vociferus</i>).

Large numbers of marine worms of the genus *Nereis*, which prey upon oysters, are eaten by shorebirds. These worms are common on both the Atlantic and Gulf coasts and are eaten by shorebirds wherever they occur. It is not uncommon to find that from 100 to 250 of them have been eaten at one meal. The birds known to feed upon them are:

Northern phalarope (<i>Lobipes lobatus</i>).	White-rumped sandpiper (<i>Pisobia fuscoicollis</i>).
Dowitcher (<i>Macrorhamphus griseus</i>).	Red-backed sandpiper (<i>Pelidna alpina sakhalina</i>).
Stilt sandpiper (<i>Micropalama himantopus</i>).	Killdeer (<i>Oxyechus vociferus</i>).
Robin snipe (<i>Tringa canutus</i>).	
Purple sandpiper (<i>Arquatella maritima</i>).	

The economic record of the shorebirds deserves nothing but praise. These birds injure no crop, but on the contrary feed upon many of the worst enemies of agriculture. It is worth recalling that their diet includes such pests as the Rocky Mountain locust and other injurious grasshoppers, the army worm, cutworms, cabbage worms, cotton worm, cotton cutworm, boll weevil, clover leaf weevil, clover root curculio, rice weevil, corn bill-bugs, wireworms, corn leaf-beetles, cucumber beetles, white grubs, and such foes of stock as the Texas fever tick, horseflies, and mosquitoes. Their warfare on crayfishes must not be overlooked, nor must we forget the more personal debt of gratitude we owe them for preying upon mosquitoes. They are the most important bird enemies of these pests known to us.

SUMMARY.

Shorebirds have been hunted until only a remnant of their once vast numbers is left. Their limited powers of reproduction, coupled with the natural vicissitudes of the breeding period, make their increase slow, and peculiarly expose them to danger of extermination.

In the way of protection a beginning has been made, and a continuous close season until 1915 has been established for the following birds: The killdeer, in Massachusetts and Louisiana; the upland plover, in Massachusetts and Vermont; and the piping plover, in Massachusetts. But, considering the needs and value of these birds, this modicum of protection is small indeed.

The above-named species are not the only ones that should be exempt from persecution, for all the shorebirds of the United States are in great need of better protection. They should be protected, first, to save them from the danger of extermination, and, second, because of their economic importance. So great, indeed, is their economic value, that their retention on the game list and their destruction by sportsmen is a serious loss to agriculture.

Approved:

JAMES WILSON,

Secretary of Agriculture.

WASHINGTON, D. C., February 9, 1911.



